
Nobel-winning IVF work laid groundwork for stem cell research

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On Monday the Nobel Prize in Physiology or Medicine went to Robert Edwards for his efforts to make in vitro fertilization a reality. The Nobel Prize-winning discovery not only allowed millions of couples to start families, it opened up the field of stem cell research.

According to the Nobel Prize press release:

“ Approximately four million individuals have so far been born following IVF. Many of them are now adult and some have already become parents. A new field of medicine has emerged, with Robert Edwards leading the process all the way from the fundamental discoveries to the current, successful IVF therapy. His contributions represent a milestone in the development of modern medicine. Alan Trouson, CIRM president, was in the thick of the early IVF work. He led the team that produced Australia's first IVF baby -- the third in the world. He went on to develop ways of using fertility drugs and freezing embryos to increase the success rate of IVF. He was also among the first to realize the possibilities of taking stem cells from the unused embryos to create cells with the potential to become every cell in the body.

As a sign of how far the IVF field has come, on the same day that Edwards won his Nobel Prize researchers at Stanford University published work showing a technique for selecting which embryos have a 90% chance of resulting in a healthy blastocyst -- a stage of development at about 5 days old, when the embryo is implanted into the mother's womb.

According to a Stanford press release, about 2/3 of embryos created through IVF normally die. Improving those odds could greatly increase the rate of successful IVF pregnancies. The work was led by Renee Reijo Pera, who is also a CIRM grantee (Comprehensive Award and New Cell Lines Award). The release goes on to say:

“ "It completely surprised me that we could predict embryonic fate so well and so early," said Reijo Pera. If an embryo's values fell within certain windows of time for the three predictive parameters, that embryo was more than 90 percent likely to go on to develop successfully into a blastocyst.

Being able to predict which embryos will survive greatly improves a woman's chance of getting pregnant. Reijo Pera is quoted in the release as saying:

“ "Women, their families and their physicians want to increase the chances of having one healthy baby and avoid high-risk pregnancies, miscarriages or other adverse maternal and fetal outcomes. It's truly a women's health issue that affects the broader family."

Reijo Pera stressed the importance of the work in understanding the earliest stages of human development, where many developmental anomalies are thought to originate. It could also be important for the creation of new embryonic stem cell lines, which come from embryos that are discarded from IVF clinics.

Tags: Reijo Pera, Stanford University, Nobel, IVF, Trouson

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